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Office Memorandum • UNITED STATES GOVERNMENT

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TO : The Files

10 May 1957

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FROM :

SUBJECT: Trip Report--Discussions on RS-11 and AS-3 Equipment

1. On May 6, 1957, a visit was made to the

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to monitor and lend

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assistance in the solution of engineering problems on the RT-11 transmitters. The problems were discussed at a meeting of the following persons:

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R&D/EP
R&D/IP

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2. RT/B-11 Transmitter: Following the meeting, the RT/B-11 transmitter was checked to determine the cause of very low RF power output on the 19 to 30 mc band. Tripling of the crystal frequency is required on this band. It was found that:

- (a) The B-voltage input had been set at 200 volts instead of the 220 volts supplied by a new BAL315/U battery under key-down resonant condition.
- (b) The filament voltage supply was also low.
- (c) The key-click filter installation in the B^+ line dropped the B supply another 20 volts.
- (d) A 60 mc trap on the slider of the antenna tap switch had raised the minimum capacity of the final tank to a value that would not permit tuning of the final tank to the high end of the band.
- (e) The crystal drive current was low as a result of the lowered voltages.
- (f) The final amplifier grid RF drive voltage was low.
- (g) The resonant frequency of the 60 mc harmonic trap changed when the antenna tap switch was varied, and it offered no noticeable reduction of TVI.

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(h) The crystals used by [redacted] were good.

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Solution: The input voltages were adjusted to the correct value. Change of the key-click filter was not considered feasible, so the B voltage dropping resistor of the oscillator was reduced to a value that would provide adequate crystal current and RF drive to the final grid. The 60 mc trap was removed. After these modifications, normal RF power output was obtained over the band. Re-insertion of the 60 mc trap reduced the RF power over the band by an amount which varied from .5 to 3 watts. At 30 mc the final tank could not be tuned. Further tests revealed that the trap was of little value. It was agreed that [redacted] would attempt to relocate and redesign the trap, and if proper operation could not be obtained it would be eliminated. Checks made on another trap located at the plate of the final amplifier revealed that it had no adverse effects on output and provided some attenuation of TVI on TV channels three and four. An attempt will be made to reduce the value of the screen dropping resistor of the final stage to compensate somewhat for the voltage loss sustained in the key-click filter.

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3. RT/A-11 Transmitter: Checks were to be made on the harmonic suppressor on the RT/A-11 to determine if the RF power output was materially reduced by the filter.

4. RR/A-11 and RR/B-11 Receivers: The replacement of the audio output transformer and a shunting resistor by a better transformer was discussed. Tests on a replacement were being conducted.

5. AC Power Supply: A sample of the AC power supply for the RS-11 was inspected. The DC output voltage was somewhat low and changes in the taps were to be made to correct this in future units. The sample supply was brought back for further inspection.

6. On May 8, 1957, a visit was made to [redacted] New Jersey. The status of the AS-3 development program was discussed at a meeting of the following persons:

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[redacted]
R&D/EP
[redacted]
R&D/IP

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7. Rough developmental models of the transmitter and tape maker were inspected. The transmitter tunes from 3 to 30 mcs in

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one band. However, the dummy loads used were reactive, and instruction was given on how to construct a dummy load with minimum reactance. [redacted] indicated that they would construct two sets of dummy loads to cover the frequency and impedance range and supply us with the original set for our tests. Although the tape maker was not yet assembled, the mechanical gearing and mode of operation were explained. The output of a tape was presented on an oscilloscope using a tape recorder to pull the tape.

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8. [redacted] is anxious to decide on a connector plug that could be used to interconnect the units and the common power supply. Final layout of the units of the system has not been decided at this time. Development of the power unit is to be the final item so that it can be made compatible with other units in the system.

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9. A short inspection tour of the plant was made and considerable test and fabricating equipment was inspected.

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